

The invention claimed is:

1. An implantable defibrillation lead, comprising:  
a coiled defibrillation electrode;  
a cover at least partially surrounding the coiled electrode resulting in a covered  
5 electrode;

the cover comprising a porous polymer;

the cover being electrically non-conductive in a dry state and conductive when  
implanted to provide effective conduction of a defibrillation electrical charge; and

the cover having a thickness of less than about 0.13 mm;

10 wherein the cover provides a barrier to tissue attachment.

2. The lead of claim 1 wherein the cover has a thickness of less than about 0.10 mm.

3. The lead of claim 1 wherein the cover has a thickness of less than about 0.07 mm.

4. The lead of claim 1 wherein the cover has a thickness of less than about 0.05 mm.

5. The lead of claim 1 wherein the cover has a thickness of less than about 0.04 mm.

6. The lead of claim 1 wherein the cover has a thickness of less than about 0.03 mm.

7. The lead of claim 1 wherein the cover has a thickness of less than about 0.01 mm.

8. The lead of claim 1 wherein the porous polymer comprises PTFE.

9. The lead of claim 8 wherein the PTFE comprises porous expanded PTFE.

10. The lead of claim 9 wherein the ePTFE comprises multiple layers of ePTFE film.

11. The lead of claim 1 wherein when compared in a force-to-deflect test, a ratio of force-  
to-deflect of said covered electrode to the coiled electrode without cover is less than about  
35:1.

12. The lead of claim 1 wherein when compared in a force-to-deflect test, a ratio of force-  
to-deflect of said covered electrode to the coiled electrode without cover is less than about  
10:1.

13. The lead of claim 1 wherein said porous polymer cover is provided with a wetting agent.

14. The lead of claim 13 wherein said wetting agent comprises polyvinyl alcohol.

15. The lead of claim 1 wherein said lead is easily extracted from a body within which it has been implanted.

16. The lead of claim 1 wherein said cover exhibits no visually apparent mechanical disruption when viewed under 30X microscopy, following testing in a saline solution with a series of 20 biphasic single cycle voltage pulses.

17. The lead of claim 1 having a fatigue life of at least 1 million cycles.

18. The lead of claim 17 having a fatigue life of at least 5 million cycles.

19. The lead of claim 17 having a fatigue life of at least 100 million cycles.

20. The lead of claim 17 having a fatigue life of at least 400 million cycles.

21. The lead of claim 1 in combination with a pulse generator.

22. An implantable defibrillation lead, comprising:  
a coiled defibrillation electrode;  
a cover at least partially surrounding the coiled electrode;  
the cover comprising a porous polymer;  
the cover being provided with a treatment of a wetting agent; and  
the cover having a thickness of less than about 0.13 mm;  
wherein the cover provides a barrier to tissue attachment.

23. The lead of claim 22 wherein the cover has a thickness of less than about 0.10 mm.

24. The lead of claim 22 wherein the cover has a thickness of less than about 0.07 mm.

25. The lead of claim 22 wherein the cover has a thickness of less than about 0.05 mm.

26. The lead of claim 22 wherein the cover has a thickness of less than about 0.04 mm.

27. The lead of claim 22 wherein the cover has a thickness of less than about 0.03 mm.

28. The lead of claim 22 wherein the cover has a thickness of less than about 0.01 mm.

29. The lead of claim 22 wherein the porous polymer comprises PTFE.

30. The lead of claim 29 wherein the PTFE comprises porous expanded PTFE.

31. The lead of claim 30 wherein the ePTFE comprises multiple layers of ePTFE film.

32. The lead of claim 22 wherein when compared in a force-to-deflect test, a ratio of force-to-deflect of said covered electrode to the coiled electrode without cover is less than about 35:1.

33. The lead of claim 22 wherein when compared in a force-to-deflect test, a ratio of force-to-deflect of said covered electrode to the coiled electrode without cover is less than about 10:1.

34. The lead of claim 22 wherein said wetting agent comprises polyvinyl alcohol.

35. The lead of claim 22 wherein said lead is easily extracted from a body within which it has been implanted.

36. The lead of claim 22 wherein said cover exhibits no visually apparent mechanical disruption when viewed under 30X microscopy, following testing in a saline solution with a series of 20 biphasic single cycle voltage pulses.

37. The lead of claim 22 having a fatigue life of at least 1 million cycles.

38. The lead of claim 37 having a fatigue life of at least 5 million cycles.

39. The lead of claim 37 having a fatigue life of at least 100 million cycles.

40. The lead of claim 37 having a fatigue life of at least 400 million cycles.

41. The lead of claim 22 in combination with a pulse generator.

42. An implantable defibrillation lead, comprising:  
an electrode;  
a cover in contact with the electrode, said cover comprised of a porous polymer;  
5 wherein the cover is non-conductive in a dry state and provides rapid re-wetting  
following a transmission of a series of electrical discharges.
43. The lead of claim 42 wherein the cover provides a barrier to tissue attachment.
44. The lead of claim 42 wherein the porous polymer cover further comprises PTFE.
- 10 45. The lead of claim 44 wherein the PTFE comprises porous expanded PTFE.
46. The lead of claim 45 wherein the ePTFE comprises multiple layers of ePTFE film.
- 15 47. The lead of claim 42 wherein the porous polymeric cover has a thickness less than  
about 0.13 mm.
48. The lead of claim 42 wherein said porous polymer cover is provided with a wetting  
agent.
- 20 49. The lead of claim 48 wherein said wetting agent comprises polyvinyl alcohol.
50. The lead of claim 42 wherein said lead is easily extracted from a body within  
which it has been implanted.
- 25 51. The lead of claim 42 in combination with a pulse generator.